Spiranthes diluvialis Sheviak

Ute ladies'-tresses

Orchidaceae (Orchid Family)

Status: State endangered, USFWS Threatened
Rank: G2S1

General Description: Perennial, terrestrial orchid with stems 8-20 inches tall, arising from tuberously thickened roots. Its narrow leaves are about 11 inches long at the base of the stem, and become reduced in size going up the stem. The inflorescence generally consists of 7 to 32 small (3/8 to 3/4 inch) white or ivory flowers clustered into a spike arrangement at the top of the stem. The species is characterized by whitish, stout, ringent (gaping at the mouth) flowers. The sepals and petals, except for the lip, are rather straight, although the lateral sepals are variably oriented, often spreading abruptly from the base of the flower. Sepals are sometimes free to the base.

Identification Tips: *Spiranthes diluvialis* is not in the commonly used floras for the Pacific Northwest. The best identification reference is by Sheviak (1984). *S. diluvialis* is distinguished from *S. romanzoffiana* by its whitish, stout, ringent (gaping at the mouth) flowers, by its lip petal being exposed in lateral view, and by its sepals being free or connate at the base for a short distance rather than fused to form a hood above the lip. In comparison, *S. romanzoffiana* has petals and sepals which usually curve in the shape of a hood on top. *S. romanzoffiana* has a more deeply constricted lip petal, and more densely congested and shorter spikes compared to *S. diluvialis.* *S. romanzoffiana* has flowers that tend to ascend and be closely appressed to the stem, while *S. diluvialis* flowers are more spreading. *S. porrifolia*, another closely related species, has cream-colored flowers and in Washington tend to occur at higher elevations.

Phenology: Flowers from mid-July through August in Washington, depending on hydrology.

Range: Known from eight states: eastern Nevada (historical), northern and south-central Utah, northern Colorado, eastern Idaho, western Nebraska, southeastern Wyoming, and southwestern Montana. It is known from north-central WA (Okanogan and Chelan Counties).

Habitat: In general, the species occurs in "...broad low-elevation intermontane valley plains, with deltaic meandered wetland complexes; restricted to calcareous, temporarily inundated wet meadow zones and segments of channels and swales where there is stable subsurface moisture and relatively low vegetation cover." (Montana Natural Heritage Program Website 1998, see address below). There are four known sites in WA. One is in a periodically flooded alkaline flat (moist meadow) adjacent to Ponderosa pine/Douglas fir woodlands and sagebrush steppe with big sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia*

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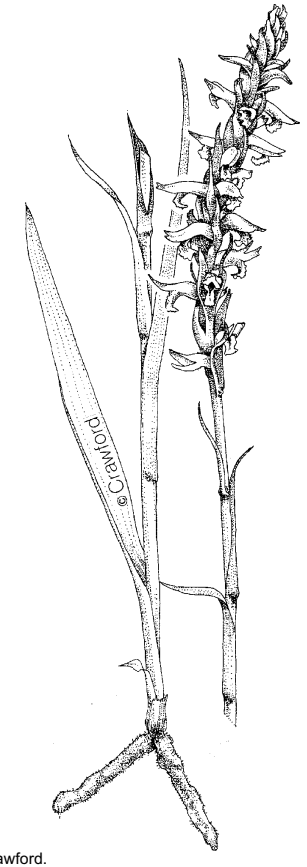

Known distribution of *Spiranthes diluvialis* in Washington

● Current (1980+)
◎ Historic (older than 1980)

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Habitat (cont.) *tridentata*) and rabbit-brush (*Chrysothamnus* sp.). Other associated species include: beaked spikerush (*Eleocharis rostellata*), green sedge (*Carex viridula* var. *viridula*), western witchgrass (*Panicum occidentale*), common witchgrass (*P. capillare*), and Torry's rush (*Juncus torreyi*).

The other three sites are adjacent to the Columbia River on stabilized gravel bars that are moist throughout the growing season and inundated early in the growing season. Common associates include redtop (*Agrostis stolonifera*) , St. John's wort (*Hypericum perforatum*), western mountain aster (*Aster occidentalis*), western witchgrass (*Panicum occidentale*), Atkinson's stickseed (*Coreopsis atkinsoniana*), white sagebrush (*Artemisia ludoviciana*), Canada bluegrass (*Poa compressa*), and narrowleaf plantain (*Plantago lanceolata*).

Elevations in Washington range from 720 to 1500 feet.

Ecology: Orchids generally require symbiotic associations with mycorrhizal fungi for seed germination. Plants of some species of *Spiranthes* are initially saprophytic, persisting underground for several years before emerging above ground. The tendency for prolonged dormancy in orchids should be considered in survey and monitoring efforts. Observations indicate that bumblebees are the most important pollinators of *S. diluvialis*. *S. diluvialis* and *S. romanzoffiana* are also found growing together, although *S. romanzoffiana* tends to bloom earlier than *S. diluvialis*.

State Status Comments: There are four known populations of this species within Washington, three of which occur quite near one another on the Columbia River.

Inventory Needs: Surveys should be conducted in watersheds containing known and/or potential habitat. Surveys should be conducted in potential habitat for multiple years due to the species tendency for prolonged dormancy.

Threats and Management Concerns: The riparian and wetland habitats that support this species have been heavily impacted by urban development, stream channelization, water diversions and other watershed and stream alterations that degrade natural stream stability and diversity. Conversion of riparian/floodplain land to agricultural uses has destroyed habitat for *S. diluvialis* in many areas. Land managers must include pollinators and pollen-producing plants in their plans to preserve this rare orchid.

1999 Produced as part of a cooperative project between the Washington Department of Natural Resources, Washington Natural Heritage Program, and the U.S.D.I. Bureau of Land Management. Persons needing this information in an alternate format may call (360)902-1340 or TTY (360)902-1125.

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References:

Montana Natural Heritage Program Website. 1998. http://orion2.nris.mt.gov/mtnhp/plants/index.html

Sheviak, C.J. 1984. *Spiranthes diluvialis* (Orchidaceae), a new species from the western United States. Brittonia 36(1): 8-14.

Sipes, S.D. and V.J. Tepedino. 1995. Reproductive biology of the rare orchid, *Spiranthes diluvialis*: breeding system, pollination, and implications for conservation. Conservation Biology 9(4): 929-938.

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